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To Explore the Role of Perceived Academic Control, Resilience and Mindfulness on Psychological Well-being of University Students

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ABSTRACT

The process of transitioning to university can be very stressful for students. This is evident in recent studies that suggest students now, are more stressed and anxious about their academic performance and achievement which can result in them experiencing low levels of happiness. Previous literature has suggested that exploring factors like resilience is important to enhance the students' psychological well-being. Consequently, the present study aims to explore the role of resilience and mindfulness along with perceived academic control on psychological well-being in particular; anxiety, stress, and happiness, amongst university students. Using an opportunity sampling, a total of 129 students aged 18-32 (Female = 105, Male = 24), took part in completing an 86-item online questionnaire that consisted of a series of self-report measures. Pearson's correlation coefficients indicated a relationship between all variables, however, there was a non-significant relationship between perceived academic control and stress. Furthermore, a series of regression analyses revealed that resilience was the strongest predictor of happiness scores. It also revealed that mindfulness significantly predicted both stress and anxiety. These findings indicate the importance of building students' resilience and promoting mindfulness practice in order to enhance their psychological well-being.

KEY WORDS:	PERCEIVED ACADEMIC CONTROL	RESILIENCE	MINDFULNESS	PSYCHOLOGICAL WELL-BEING	HAPPINESS
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Introduction

In recent years, there has been reports of a concerning increase in the levels of stress and anxiety experienced by university students, impacting their health and psychological well-being (Bayram & Bilgel, 2008; Beiter et al., 2015). According to the Institute of Public Policy Research report, in the UK only, more than 15,000 university students reported a mental health issue to their institution, (Thorley, 2017). In an academic setting, stress refers to the academic pressure or tension due to the student's need to achieve and excel in their studies (Lee et al., 2011). Some students may experience stress and anxiety symptoms due to numerous factors, including academic, interpersonal and social demands when transitioning to university. Likewise, Thorley (2017) found that students were also less likely to report high levels of well-being and life satisfaction, indicating lower levels of happiness. Therefore, the present study is aimed to seek greater insight into perceived academic control, resilience and mindfulness and how these variables can help reduce stress and anxiety levels. In addition, the study provides further suggestions on possible interventions that may encourage students to lead a healthy, happy life.

Perceived Academic Control

Perceived control is often referred to as the 'person's subjective estimate of his or her capacity to manipulate, influence, or predict some aspect of the environment' (Perry et al., 2005:369). Theoretically, the concept perceived control has stemmed from Rotter's (1966) locus of control theory and the learned helplessness theory (Seligman, 1975). It was also argued that perceived control is a key feature in several motivational theories like the self-efficacy theory (Bandura, 1977), and causal attribution theory (Weiner, 1985). Similarly, the term perceived academic control; which was adapted from the construct perceived control, refers to the student's mindset and belief in their ability to influence their academic performance and achievement outcomes. Perry et al. (2001) suggested that it is a cause and effect process, where some student may acquire certain academic traits such as; effort expenditure, task strategies, and intellectual ability, that influence their academic performance and their psychological well-being. For instance, some students would feel that they are 'in control' over their academic performance, which would result in more positive outcomes (feeling of hope, pride, and joy) whereas, students who feel 'out of control' would experience negative outcomes (boredom, anger, and anxiety; Pekrun et al., 2010). Similarly, Hall et al. (2006) suggested that students who scored high levels of perceived academic control, not only did they perform academically well, experienced lower levels of stress but also expressed positive emotions like happiness and enjoyment.

The ability to be 'in control' is an essential trait for university students, as universities are different from colleges and schools. One major difference is that there are fewer taught sessions, as students are expected to be more independent and have the ability to plan their time and structure their studies effectively, meaning greater responsibilities and greater pressure to achieve. For first-year students, these new demands can cause their levels of academic control to be unstable or make them feel completely out of control (Perry, 2003). Stupnisky et al. (2012) suggested that this instability could arise as a result of their academic environment, which causes students to doubt their levels of control over academic results. For instance, a student's level of control may differ from one module to another within given course or may differ when performing different academic tasks. Furthermore, Stupnisky et

al. (2013) suggested that students' levels of academic control become more stable after their first year at the university.

A widespread empirical research has suggested that perceived academic control is positively associated with educational outcomes; academic engagement (Perry et al., 2001), academic achievement (You et al., 2011) and effective study techniques (Cassidy & Eachus, 2000). In addition to this, studies have observed an association between perceived control and psychological well-being (Thompson et al., 1993; Chipperfield & Greenslade, 1999). In particular, Larson (1989) assessed the relationship between perceived control and happiness across different age groups. Individuals were asked to record, several times a day for a week, their levels of happiness and control over their current situations. Results indicate that individuals who felt in control over the situation expressed positive feelings of happiness. However, this study used the Experience Sampling Method (ESM); the study of ongoing experience, therefore, the data cannot be generalized as it portrays the individual's own subjective experience. In addition, some argued that using ESM may change the behaviour being studied (Zirkel et al., 2015). Nonetheless, the findings of the study support the relationship between happiness and perceived control.

In contrast, Gallagher et al. (2014) conducted a meta-analysis on the correlation between perceived control and anxiety, reviewing 51 studies with a total of 11,218 participants. Results indicate that perceived control significantly and negatively associated with both trait anxiety and anxiety disorders in children and adults. Several studies found similar results when investigating perceived control and anxiety (Pereira et al., 2012; Gould & Edelstein, 2010). Moreover, a study examined the role of perceived control on examination stress, asked participants to submit a set of possible questions for an upcoming test. Findings indicate that students who were informed that the questions submitted would be used for the exam, reported higher levels of control and experienced less stress, in comparison to students who did not have control over the exam questions (DasGupta, 1992). Following this literature review of academic control, a further insight into perceived academic control and its impact on students' psychological well-being is recommended. In addition, this study will also explore the direct relationship between academic control and happiness in students.

Resilience

Another factor that may influence students' psychological well-being is resilience. Resilience is a widely researched area of psychology. However, to this day there has been some debates regarding the nature of resilience, whether it should be defined as a trait or a process. For this study, resilience is referred to as a process; the individual's ability to 'bounce back' and recover when faced with adversity or a significant source of stress, (Garmezy et al., 1984; Rutter, 1993; Luthar et al., 2000; Masten & Powell, 2003). From an educational standpoint, Alva (1991) suggested that resilient students, despite being put under a lot of pressure and stress, are the ones who have the ability to maintain high levels of motivation and are able to perform academically well; which would result in experiencing feelings of happiness. However, students with lower levels of resilience are at risk of underachievement and eventually dropping out of university, this can also lead to an increased risk of experiencing anxiety and stress symptoms, (Hupfeld, 2007).

Many previous studies have found that resilience plays a crucial role in enhancing students' well-being and happiness (Cicchetti & Rogosch, 1997; Lyubomirsky & Porta, 2010) as well as benefiting students with the ability to cope with academic demands, which leads to a decrease in stress and anxiety levels, (Steinhardt & Dolbier, 2008; Hartley, 2013). Likewise, Tugade and Fredrickson (2004) have suggested that resilient students tend to view their life with a positive and optimistic approach, which results in positive well-being and greater levels of happiness. A key requirement of resilience is the interaction between both protective and risk factors that can help adjust the individual's perception of the negative impact of an adverse life event. Risk factors refer to the presence of any environmental or personal attributes that increases the chance of experiencing negative outcomes. Whereas, protective factors relate to the environmental or individual attributes that reduce the negative impact of a risk factor and lead to better outcomes. Examples of protective factors that students may have include; family and peer support, supportive academic environment, sense of belonging to the university, teacher feedback, and internal locus of control, (Garmezy, 1991; Werner & Smith, 1992; Gonzalez & Padilla, 1997). In addition, Terzi (2013) suggested that students in higher education are now faced with a lot of pressure and responsibilities to be able to keep up with academic demands resulting in a state of mental and emotional strain. Therefore, for students, developing a sense of resilience is essential in the process of coping with stress.

To assess the individual's resilience level, several measures have been developed. Some scales were established to measure trait resilience which explores the personal characteristics that enhance individual adaptation to stressful situations (e.g. Connor Davidson Resilience Scale; Connor & Davidson, 2003; Dispositional Resilience Scale; Bartone, 2007). Later, Smith et al. (2008) developed the Brief Resilience Scale (BRS). In contrast to previous measures, the BRS was proposed to measure the individual's ability to recover and bounce back from stressful circumstances. The scale reported a high internal consistency and retest-reliability across different populations and cultures, (Amat et al., 2014; Rodriguez-Rey et al., 2016; Chmitorz et al., 2018).

The association between resilience, stress, and anxiety is widely studied and earlier research has revealed that resilience is negatively correlated with anxiety and stress, (Ahern & Norris, 2011; Cooke et al., 2013). Hjemdal et al. (2011) examined the correlation between resilience and the levels of obsessive-compulsive, anxiety, and depression symptoms using a sample of Norwegian high school students. Found that students who scored high on the resilience scale predicted lower depression and anxiety scores, in comparison to students that scored low on resilience. However, no prospective data were collected to determine the long-term effects of resilience in reducing stress and anxiety symptoms. Likewise, Smith et al. (2008) used the BRS to assess resilience and other factors such as, personality characteristics and health outcomes amongst undergraduate students. Findings show, resilient students predicted lower stress and anxiety scores, in addition to high optimism and social support scores.

On the contrary, a study conducted by Datu et al. (2017) explored the associations between subjective happiness and educational outcomes. The results suggested that happiness positively predicted emotional engagement, flourishing and school resilience. However, compared to the research on stress and anxiety, studies

highlighting resilience as a predictor of happiness amongst university students is limited (Kjeldstadli et al., 2006; Cohn et al., 2009). Therefore, to address this, the current study will look further into the role of resilience in positively predicting the students' levels of happiness and negatively predicting their levels of stress and anxiety.

Mindfulness

Recently, psychologists have been more focused on investigating the concept of mindfulness, as a potential aid to psychological well-being. A definition of mindfulness that is often used by many researchers is 'the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment' (Kabat-Zinn, 2003:145). Simply put, mindfulness is a psychological process that enhances present awareness and reduces depression, stress, and anxiety in both clinical and healthy individuals (Goleman, 1988; Astin, 1997; Chang et al., 2004; Shapiro et al., 2007; Taren et al., 2013).

Martin (1997) argued that when an individual reacts automatically to situations without much awareness, referred to as an 'automatic-pilot', they may be exposed to the risk of facing the consequences of a negative outcome. Furthermore, some suggested that mindfulness is a key characteristic of self-regulation, that is often referred to as 'the process by which a system regulates itself to achieve specific goals' (Shapiro & Schwartz, 2000:254). In addition to this, Brown and Ryan's (2003) Self-Determination Theory suggest that mindfulness portray a significant role in enhancing self-regulation and psychological well-being. Thus, individuals who are described as 'being mindful' of their present surroundings are more likely to have a good mental well-being and less likely to experience stress. Some researchers view mindfulness as a trait-like construct, where the individual has the ability to enter a mindful perspective automatically (Brown & Ryan 2003; Baer et al., 2006), whereas others view it as a state; a temporary outcome resulting from mindfulness training (Lau et al., 2006; Tanay & Bernstein, 2013).

The majority of students experience stressful circumstances during their time at university, this can involve the academic workload, social interactions and financial problems (Evans et al., 2008; Kawase et al., 2008). Students encountering these situations have the tendency to worry and become anxious about the future, without paying much attention to the present moment. This would result in negative outcomes for the student such as poor academic performance and achievement and poor mental health (Keng et al., 2011; Mandal et al., 2012). Consequently, it was proposed that mindfulness practice can be beneficial for students in buffering some of the negative stressors related to university and improve their mental well-being, (Shapiro et al., 1998; Galante et al., 2017).

A widely used instrument to measure mindfulness is the Mindful Attention Awareness Scale (MAAS). The MAAS was established by Brown and Ryan (2003), used to assess trait mindfulness and assess the individual's attention and awareness of the current moment. Additionally, in an attempt to reduce the individual's stress levels, the Mindfulness-based Stress Reduction programme (MBSR) was proposed and has shown to be effective across different population (Grossman et al., 2004). Supporting this, Carmody and Baer (2008) investigated the effectiveness of the MBSR programme using a clinical sample, found that following the completion of the

programme, there was an increase in the individual's mindfulness and well-being and a decrease in stress levels. Similarly, a meta-analysis revised 39 studies with a total of 1,140 participants that took part in a mindfulness-based training. Results suggest that mindfulness training is a promising intervention for reducing anxiety levels and mood symptoms, (Hofmann et al., 2010). However, Toneatto and Nguyen (2007) also reviewed the impact MBSR had on reducing the symptoms of depression and anxiety, claimed that the effect MBSR had on anxiety and depression was unclear.

Contrarily to the research on mindfulness and its negative association with stress and anxiety, it was found that mindfulness positively correlated with positive emotion, such as happiness and enjoyment (Geschwind et al., 2011; Amutio et al., 2015). A study done by Luders et al. (2009) aimed to explore whether mindfulness meditation can change the structure of the brain. A total of 44 participants who had a long-term mindfulness meditation experience, took part in the study and found that MRI scans show a significant increase in the right hippocampus; which is responsible for memory, learning and emotion regulation (happiness). In contrast, there was a reduction in the grey matter volume in the amygdala, which is associated with anxiety, stress, and fear. These results indicate the mindfulness meditation does not only increase mindful behaviour, encourages positive emotions and improve psychological well-being but also change the structure of the brain. However, the study lacks longitudinal analysis, which is recommended to establish the direction of an underlying link between mindfulness practice and brain structure. While the majority of previous studies explore the impact of mindfulness on psychological well-being using a sample of older adults or clinical samples, the research into its impact on students' psychological well-being is limited. Therefore, further research is needed to explore these associations amongst the student population.

Rationale

As reported in previous literature, the role of resilience and mindfulness on health outcomes is substantial (Carmody & Baer, 2008; Ahern & Norris, 2011). However, the concept of perceived academic control was mainly examined with academic achievement, while the investigation of its relation to well-being is insufficient. In addition, it should be taken into account the effects of these variables measured together on psychological well-being using a sample of university students. Therefore, this study aims to expand on existing literature by exploring the role of perceived academic control, resilience, and mindfulness on psychological well-being; referring to anxiety, stress, and happiness, amongst university students.

Hypotheses

H1- To investigate whether perceived academic control, resilience and mindfulness significantly and positively predict happiness.

H2- To investigate whether perceived academic control, resilience and mindfulness significantly and negatively predict anxiety.

H3- To investigate whether perceived academic control, resilience and mindfulness significantly and negatively predict stress.

Method

Design

The present study employed a correlational design, with data collected using established self-report measures. The study aimed to examine the impact of the following predictor variables: perceived academic control, resilience, and mindfulness, on the criterion variables: anxiety, stress, and happiness. Participants were asked to complete an online questionnaire that consisted of different scales that measures both the predictor and criterion variables.

Participants

With the study aiming to target the student population, a total of 129 students participated aged 18-32 ($M = 20.78$, $SD = 2.30$). However, the number of males and females who took part was unequal ($F = 105$, $M = 24$). According to Green (1991), the minimum required sample size was calculated using the $N \geq 104 + m$ formula, where m refers to the number of predictors used in this study which in this case its three predictors. This indicates that the minimum required sample size is 107, therefore the recommended size was achieved in this study. The participants were recruited through an opportunity sampling via the Research Participation Pool. The use of this sampling method deemed suitable as it allows to obtain a large amount of data more easily and quickly, while targeting the individuals that fit the criteria and are available at the time the study is carried out and willing to take part, (Brady, 2011).

Materials

A total of five well-established scales were used, resulting in a total of 86 items altogether, plus a set of basic demographic questions presented in the questionnaire. The scales selected for this study did not require a permission from the author, as they are available to use for academic purposes. All the measures and demographic questions were inputted into the online software called Qualtrics, to use for data collection. Items from some of the measures indicated below were reversed scored to reduce the possibility of response bias.

Perceived Academic Control (PAC)

The participants' academic control level was measure using the Perceived Academic Control Scale developed by Perry et al. (2001). PAC consists of eight items with responses recorded using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Example of an item on the scale is; "I see myself as largely responsible for my performance throughout my college career". The following items were reversed scored 3, 5, 6 and 8 (Appendix 7). Higher scores reflect a higher sense of academic control in students.

Brief Resilience Scale (BRS)

One of the highly recommended resilience scales that reported a high Cronbach's alpha value ranging from .80-.91 was the Brief Resilience Scale (Smith et al., 2008) therefore, it was used to measure the predictor variable resilience. The BRS consists of 6 items, that also uses a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Example of an item on the scale is; "I tend to bounce back quickly after hard

times” (Appendix 8). Individuals scoring high on the BRS indicate their high levels of resilience. In addition, items 2, 4 and 6 were reversed scored.

Mindful Attention Awareness Scale (MAAS)

To assess the final predictor variable mindfulness, the Mindful Attention Awareness Scale (Brown & Ryan, 2003) was used (Appendix 10). MAAS is a 15-item scale aimed to assess trait mindfulness and has been validated for use with university students. Previous studies have reported a high internal consistency, with a Cronbach’s alpha score ranging from .80-.90, (Brown & Ryan, 2003; Carlson & Brown, 2005). Participants were asked to record their response using a 6-point Likert scale (1 = almost always, 6 = almost never), an example of the items used on the scale is; “I find myself preoccupied with the future or the past”. Individuals with high scores indicate that their level of trait mindfulness is high.

Depression Anxiety Stress Scales (DASS)

The criterion variables, stress and anxiety were measured using items from the Stress and Anxiety subscales (Appendix 9) from the Depression Anxiety Stress Scales (Lovibond, S.H & Lovibond, P.F, 1995). Both subscales consist of 14 items each, where participants are asked to record their answers using a 4-point Likert scale (0 = did not apply to me at all, 3 = applied to me very much or most of the time). An example of the items stated on the anxiety subscale is; “I felt scared without any good reason”, and on the stress subscale is; “I found myself getting upset rather easily”. Lower scores reflect lower levels of stress and anxiety.

Oxford Happiness Questionnaire (OHQ)

Lastly, to measure the participants’ level of happiness, the Oxford Happiness Questionnaire (Hills & Argyle, 2002) was used. OHQ is a 29-item scale, and participants are asked to record their responses on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree). The scale was reported to demonstrate a high internal consistency, with a Cronbach’s alpha score of .91. An example of the items stated in the scale is; “I am well satisfied about everything in my life”, (Appendix 11), the following items were reversed scored 1, 5, 6, 10, 13, 14, 19, 23, 24, 27, 28 and 29. Individuals with higher scores represent their greater levels of happiness.

Procedure

Once the online questionnaire for this study was uploaded on the MMU Research Participation Pool, where students were able to view the study invitation page (Appendix 2) to decide whether to participate or not. Once the participants signed up for the study, the Qualtrics link for the questionnaire was revealed to them. Before proceeding, participants were required to read the participant information sheet; explaining the aims of the current study (Appendix 3), once this is done, they were asked to give their consent to take part in the study (Appendix 4). Following this, the task was very straightforward, as participants were asked to complete some basic demographic questions (Appendix 6) asking for age, gender and their year of study followed by a series of online self-report measures. Upon completing the questionnaire, the participants were presented with the debriefed sheet (Appendix 5). It informed them further on the full aims of the study and their right to withdraw from the study, by emailing the researcher with their unique, anonymous personal code that they provided following their consent, at any stage up until the set date

before the data was analysed. In addition to this, they were also informed that the data they provided will remain completely anonymous and confidential.

Ethical Consideration

Prior to any data collection, a full ethical approval (Appendix 1) was obtained from the research supervisor to ensure the study is conducted following the ethical standards provided by both the British Psychological Society (BPS) and the University (the Academic Ethical Framework). While the participants were provided with an information sheet outlining the aims of the study, they were not informed directly about the assessment of the following variables: anxiety, stress, and happiness, instead the term 'psychological well-being' was used to refer to these variables. This is believed to be necessary to reduce the possibility of social desirability bias. However, participants were then fully de-briefed regarding the true aims of this study. Another consideration that was taken into account, was that while the study aimed to examine the criterion variables, stress and anxiety, the study did not place the participants at any risk or harm. In addition, they were provided with details of support service (MMU counselling) in the de-brief sheet as a precaution. Lastly, participants were ensured the data collected will be kept confidential and anonymous and that it will be stored securely on the researcher's computer which is password protected.

Results

Data Preparation

Raw data was exported from Qualtrics into SPSS v.24 for further analysis (for all SPSS output see Appendix 12). Some items were reverse scored as instructed by the author, before conducting any data analysis, on the following measures: Perceived Academic Control scale (PAC; Perry et al., 2001), Brief Resilience Scale (BRS; Smith et al., 2008) and the Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002) (see Materials section for details of reversed-scored items).

Reliability analysis

The internal consistency was measured using Cronbach's alpha to measure the reliability of each scale used. According to Nunnally (1978), the acceptable Cronbach's alpha level of reliability of any instrument must be .70 or higher. Table 1 shows the Cronbach's alpha and confidence intervals for all self-report measures and subscales.

Table 1

Reliability analysis for Perceived Academic Control, Resilience, Stress, Mindfulness, Anxiety and Happiness. (N = 129)

Measures	Number of items	Cronbach's alpha	95% Confidence Interval for alpha	
			Lower	Upper
Perceived Academic Control	8	.81***	.76	.86
Resilience	6	.85***	.80	.88
Stress	14	.93***	.92	.95
Mindfulness	15	.87***	.84	.90
Anxiety	14	.92***	.89	.94
Happiness	29	.91***	.88	.93

Note. *F* tests with true value =0.7, *** indicates $p < .001$

The Cronbach's alpha coefficients for all scales were above .70, which is the recommended level of reliability. The *F* test values for all measures were significant at the $p < .001$ level, therefore indicating reliability significantly above .7 for all measures. Following the reliability analysis, scores from each item within each measure were summed to calculate the scale totals for the following measure; Brief Resilience Scale, Mindfulness Attention Awareness Scale and the Oxford Happiness Questionnaire.

Descriptive statistics

Table 2 presents the calculated means and standard deviations for each of the measures used.

Table 2

Descriptive Statistics for Perceived Academic Control, Resilience, Stress, Mindfulness, Anxiety and Happiness. (N = 129)

Variable	Mean	SD
Perceived Academic Control	31.95	4.55
Resilience	3.05	0.78
Stress	30.77	9.90
Mindfulness	3.52	0.84
Anxiety	26.77	9.05
Happiness	3.90	0.69

Correlation Coefficients

Pearson correlations were computed for each variable to see which variables significantly correlated prior to the regression. (Table 3)

Table 3

Pearson Correlation Matrix for Perceived Academic Control, Resilience, Stress, Mindfulness, Anxiety and Happiness (N = 129).

Variable	Perceived Academic Control	Resilience	Stress	Mindfulness	Anxiety	Happiness
Perceived Academic Control	-	.31***	-.08	.08	-.30***	.37***
Resilience		-	-.42***	.24**	-.41***	.52***
Stress			-	-.49***	.43***	-.37***
Mindfulness				-	-.41***	.44***
Anxiety					-	-.52***
Happiness						-

Note. ** $p < .01$, *** $p < .001$, two-tailed.

From the correlation matrix, it was shown that Perceived Academic Control $r(129) = .37$, $p < .001$, Resilience $r(129) = .52$, $p < .001$ and Mindfulness $r(129) = .44$, $p < .001$ significantly and positively correlated with Happiness. Furthermore, Perceived

Academic Control $r(129) = -.30, p < .001$, Resilience $r(129) = -.41, p < .001$ and Mindfulness $r(129) = -.41, p < .001$ negatively and significantly correlated with Anxiety. Additionally, while the correlation matrix shows that Resilience $r(129) = -.42, p < .001$ and Mindfulness $r(129) = -.49, p < .001$ significantly and negatively correlated with Stress, there was no significant correlation between Perceived Academic Control $r(129) = -.08, p = .36$ and Stress therefore, Perceived Academic Control will not be carried forward to the multiple regression analysis to predict Stress.

Regression Analysis

Three multiple regressions were carried out to investigate 'Perceived Academic Control', 'Resilience' and 'Mindfulness' as predictors of 'Happiness' (Table 4) and 'Anxiety' (Table 5), also 'Resilience' and 'Mindfulness' as predictors of 'Stress' (Table 6).

Regression 1

Table 4

Summary of Multiple Linear Regression Analysis of Perceived Academic Control, Resilience and Mindfulness Scores Predicting Happiness Scores.

Variable	B	β	t	Sig.(p)
Constant (intercept)	.88			
Perceived Academic Control	.03	.23	3.17	.002
Resilience	.32	.37	5.01	< .001
Mindfulness	.27	.33	4.67	< .001

Note. $R^2 = .42$

As shown in Table 4, a significant model emerged ($F(3, 125) = 29.93, p < .001$). Furthermore, there is a strong relationship between the variables ($R = .65$) and the model can account for approximately 41.8% (adjusted $R^2 = 40.4\%$) of the variance in happiness scores. Regression 1 therefore, indicates that all variables significantly predicted happiness scores, however, the strongest predictor of happiness was resilience, $\beta = .37, t(125) = 5.01, p < .001$ (Table 4). This relationship is illustrated further in Figure 1.

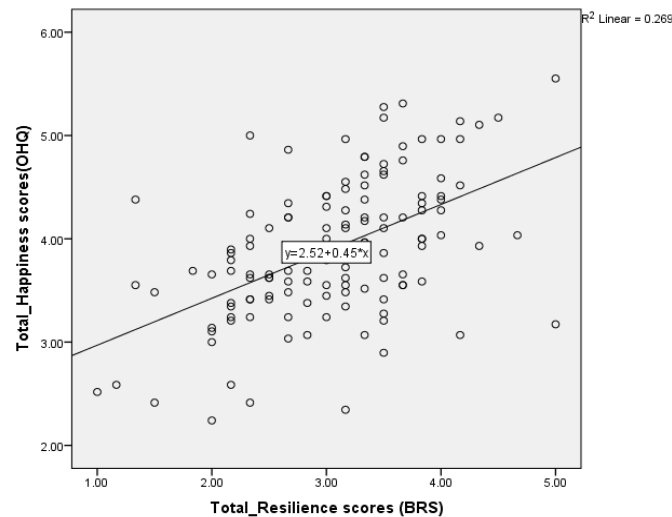


Figure 1. Scatterplot with regression line illustrating the significant positive relationship between Resilience and Happiness.

This regression analysis indicates that for every one standard deviation that 'Resilience' increases, the 'Happiness' scores increases by .37 of a standard deviation. Additionally, scatterplots were also produced for the Perceived Academic Control and Mindfulness variables (Appendix 13).

Regression 2

Table 5

Summary of Multiple Linear Regression Analysis of Perceived Academic Control, Resilience and Mindfulness Scores Predicting Anxiety Scores.

Variable	<i>B</i>	β	<i>t</i>	Sig. (<i>p</i>)
Constant (intercept)	60.83			
Perceived Academic Control	-.38	-.19	-2.43	.017
Resilience	-3.08	-.27	-3.30	< .001
Mindfulness	-3.57	-.33	-4.31	< .001

Note. $R^2 = .30$

The regression analysis presented in Table 5 indicates that the relationship between these variables have shown to be significant ($F(3, 125) = 17.99, p < .001$). This indicates that perceived academic control, resilience and mindfulness can account for approximately 30.2% (adjusted $R^2 = 28.5\%$) of the variance in anxiety scores. Mindfulness was found to be the strongest predictor of anxiety, $\beta = -.33, t(125) = -4.31, p < .001$ (Table 5). This relationship is illustrated further in Figure 2.

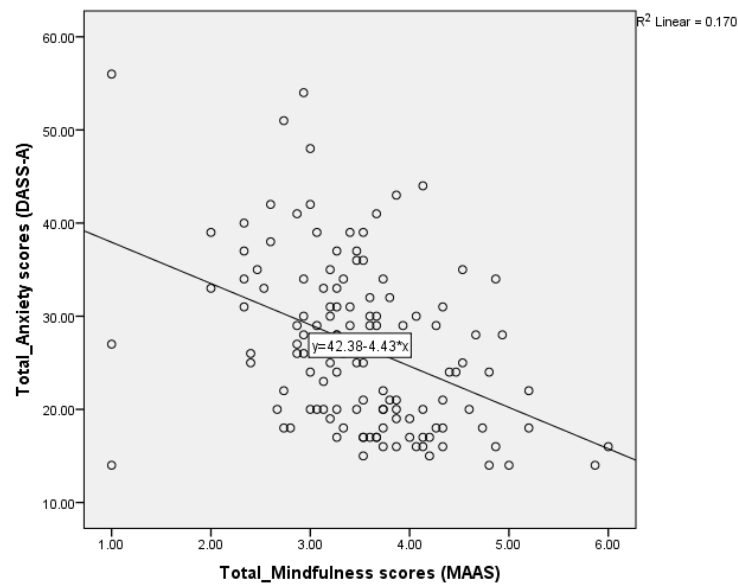


Figure 2. Scatterplot with regression line illustrating the significant negative relationship between Mindfulness and Anxiety.

This regression analysis indicates that for every one standard deviation that 'Mindfulness' increases, the 'Anxiety' scores decreases by .33 of a standard deviation. Additionally, scatterplots were also produced for the Perceived Academic Control and Resilience variables (Appendix 14).

Regression 3

Table 6

Summary of Multiple Linear Regression Analysis for Resilience and Mindfulness Scores Predicting Stress Scores.

Variable	<i>B</i>	β	<i>t</i>	<i>Sig. (p)</i>
Constant (intercept)	60.13			
Resilience	-4.05	-.32	-4.28	< .001
Mindfulness	-4.83	-.41	-5.48	< .001

Note. $R^2 = .34$

Regression 3 also indicated a significant relationship between the variables ($F(2, 126) = 31.73, p < .001$). The relationship between the variables was strong ($R = .58$) indicating that resilience and mindfulness can both account for approximately 33.5% (adjusted $R^2 = 32.4\%$) of the variance in stress scores. While both variables have shown to be negatively significant, mindfulness was much stronger predictor of stress, $\beta = -.41, t(126) = -5.48, p < .001$ (Table 6). The relationship between mindfulness and stress is illustrated further in Figure 3.

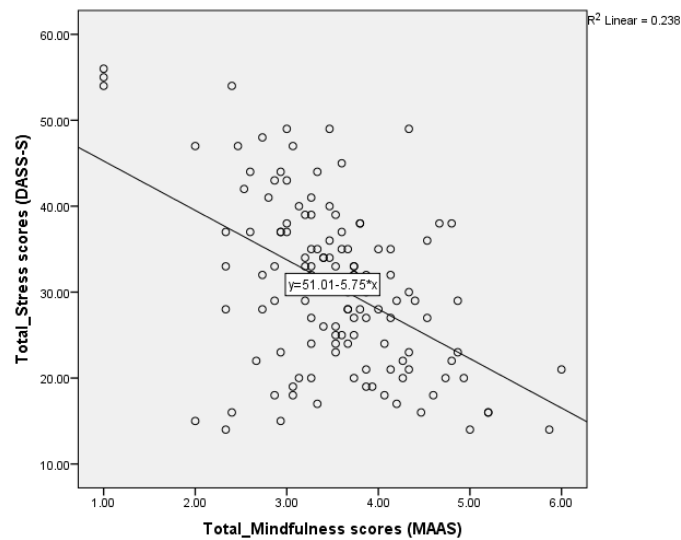


Figure 3. Scatterplot with regression line illustrating the significant negative relationship between Mindfulness and Stress.

This regression analysis indicates that for every one standard deviation that 'Mindfulness' increases, the 'Stress' scores decreases by .41 of a standard deviation. An additional scatterplot was produced to illustrate the relationship between Resilience and Stress (Appendix 15).

Discussion

Summary of finding

The present study aimed to explore the role of resilience and mindfulness along with perceived academic control on psychological well-being (anxiety, stress and happiness) using a sample of university students. The findings reported a significant correlation between the predictor variables and the criterion variables, supporting the proposed hypotheses of this study (H1, H2 and H3). However, it is interesting to note that, results revealed the relationship between perceived academic control and stress was not significant.

Perceived Academic Control

The current findings revealed that academic control positively correlated with happiness, indicating that students with a high sense of control experienced high levels of happiness. This finding supports previous research by Hall et al. (2006) who found that high levels of academic control is positively associated with academic achievement and positive emotions such as happiness. On the contrary, academic control was found to significantly and negatively predict anxiety, supporting Gallagher et al's (2014) meta-analysis that suggested a significant, negative association between perceived control and anxiety. However, the relationship between academic control and stress was not significant, contradicting DasGupta's (1992) research that found students with high levels of academic control significantly predicted lower stress scores. This could be due to the sample of students used in this study, scoring higher than average on the perceived academic control scale, indicating the students had a great sense of control which is why it may not associate with stress (Perry et al., 2001). Therefore, perceived academic control was not carried forward to the regression analysis, and additional research is recommended to investigate this further. Moreover, regression analysis highlighted that perceived academic control was the weakest variable that contributed to both happiness and anxiety.

Resilience

In line with previous studies (Kjeldstadli et al., 2006; Cohn et al., 2009; Datu et al., 2017), resilience was found to be positively correlated with happiness, revealing that resilient students were able to portray themselves as 'being very happy'. On the contrary, the findings show that resilience was significantly and negatively associated with stress and anxiety, supporting Hjemdal et al's (2011) study that revealed a significantly, negative correlation between resilience and levels of obsessive-compulsive symptoms, anxiety and depression. These findings also support Smith et al's (2008) study that suggested resilient undergraduate students significantly predicted lower stress and anxiety scores. Furthermore, the regression analysis has revealed that resilience was the strongest predictor of happiness scores, indicating the students who have a high sense of resilience are able to experience higher feelings of happiness than low resilient students. This finding suggests that it is important to encourage a strong sense of resilience among students, as this leads to an increase in positive emotions experienced by students and also an increase in better health outcomes.

Mindfulness

This study has found that mindfulness also positively correlated with happiness, this current finding is consistent with earlier research, that suggests mindful individuals tend to report a strong feeling of happiness, (Luders et al., 2009; Geschwind et al., 2011; Amutio et al., 2015). In contrast, results show that mindfulness negatively correlated with stress and anxiety. Supporting Carmody and Baer's (2008) research which stated that individuals who received an 8-weeks MBSR programme, reported an increase in mindfulness and well-being and also a reduced stress levels. Additionally, further analysis indicated that mindfulness was the strongest predictor of both stress and anxiety scores. These findings contradict Toneatto and Nguyen's (2007) meta-review, which claimed that being mindful or practicing mindfulness did not have any effect on decreasing anxiety levels in a clinical sample. However, the finding of this study was in line with a meta-analysis done by Hofmann et al's (2010) that found individuals who participate in mindfulness practice, reported to have lower levels of anxiety. Therefore, promoting mindfulness practice in educational settings can be beneficial for students in buffering some of the negative stressors related to university and enhance their psychological well-being.

Limitations and Further Research

While this study found to report significant results regarding perceived academic control, resilience, mindfulness and their impact on psychological well-being, there are some limitations that must be considered. First, this study did not consider the distribution of participants across grade levels within the university. This can be an issue, as students in different year groups may interpret academic control differently depending on past academic experiences. Thus, further research should investigate perceived academic control separately as a predictor of psychological well-being with consideration of year group differences. A second limitation of the study is gender bias. The majority of the participants that took part in this study were female (105), in comparison to males which was 24. This could be due to the fact that this study was conducted using an online questionnaire, as Underwood et al. (2000) found that females were more likely to respond to online surveys than males. Hence, for future research, it would be beneficial to distribute a printed version of the questionnaire to ensure gender balanced sample.

Lastly, while established self-report measures were effectively selected to measure the variables, they can also be a problem. This can be an issue due to the occurrence of social desirability bias, this often happens when the participant does not provide honest responses in order to be viewed in a favourable manner (Paulhus, 1991). Therefore, the data must be interpreted with caution. Consequently, for further research, it is recommended to take into account Fisher's (1993) study who found that the use of indirect questions tended to reduce social desirability bias.

Implications of the findings

As discussed previously, there is an increase in mental health problems within the student population, therefore this study has provided a great insight on the factors that may help reduce students' stress and anxiety levels and promote happy and healthy lifestyle. With mindfulness as the strongest predictor in reducing stress and anxiety, it is important for higher education institutes to provide mindfulness training to students as a means to reduce stress levels. In addition to this, it was reported that there is an increase in the number of students seeking help in the recent years

(Thorley, 2017). Therefore, Galante et al. (2017) proposed the Mindfulness Skills for Students (MSS). The MSS is an 8-week mindfulness course that involved interactive exercises, mindfulness meditation session and periods of reflection and inquiry. Findings show MSS course to be effective in decreasing stress levels throughout the academic year and in particular, during the examination season. Therefore, implementing mindfulness training, like the MSS, across many higher education institutes can optimise students' wellbeing.

Additional implication for this study, is the finding of the significant positive relationship between resilience and happiness, indicating the importance of encouraging students to be more resilient and in control for better life satisfaction outcomes. These results also suggest that establishing an effective and feasible interventions that aim to build students' resilience and develop coping skills, would result in students feeling much happier with their academic performance and in general (Houston et al., 2016). Following this, a potential research can later investigate the long-term effect resilience interventions can have on increasing students' levels of happiness.

Conclusion

To conclude, the overall findings of this present study provided evidence that highlighted the relationships between the predictor variables of perceived academic control, resilience and mindfulness and their impact on the criterion variables of anxiety, stress and happiness. The study's outcomes were consistent with the majority of previous research, with the additional insight on the direct impact perceived academic control, resilience and mindfulness had on the levels of happiness among the student population. Practical implications of this study were proposed to allow future research to study this topic in more depth and establish possible interventions that may optimise students' psychological well-being.

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